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Current Trends in Numerical Simulation for Parallel Engineering Environments New Directions and Work-in-Progress

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Disclaimer

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Current Trends in Numerical Simulation for Parallel Engineering Environments

New Directions and Work-in-Progress

ParSim 2006

In today's world, the use of parallel programming and architectures is essential for simulating practical problems in engineering and related disciplines. Remarkable progress in CPU architecture, system scalability, and interconnect technology continues to provide new opportunities, as well as new challenges for both system architects and software developers. These trends are paralleled by progress in parallel algorithms, simulation techniques, and software integration from multiple disciplines.

ParSim brings together researchers from both application disciplines and computer science and aims at fostering closer cooperations between these fields. Since its successful introduction in 2002, ParSim has established itself as an integral part of the EuroPVM/MPI conference series. In contrast to traditional conferences, emphasis is put on the presentation of up-to-date results with a short turn-around time. This offers a unique opportunity to present new aspects in this dynamic field and discuss them with a wide, interdisciplinary audience. The EuroPVM/MPI conference series, as one of the prime events in parallel computation, serves as an ideal surrounding for ParSim. This combination enables the participants to present and discuss their work within the scope of both the session and the host conference.

This year, eleven papers from authors in nine countries were submitted to ParSim, and we selected five of them. They cover a wide range of different application fields including gasflow simulations, thermo-mechanical processes in nuclear waste storage, and cosmological simulations. At the same time, the selected contributions also address the computer science side of their codes and discuss different parallelization strategies, programming models and languages, as well as the use nonblocking collective operations in MPI. We are confident that this provides an attractive program and that ParSim will be an informal setting for lively discussions and for fostering new collaborations.

Several people contributed to this event. Thanks go to Jack Dongarra, the EuroPVM/MPI general chair, and to Bernd Mohr, Jesper Larsson Träff, and Joachim Worringen, the PC chairs, for their encouragement and support to continue the ParSim series at EuroPVM/MPI 2006. We would also like to thank the numerous reviewers, who provided us with their reviews in such a short amount of time (in most cases in just a few days) and thereby helped us to maintain the tight schedule. Last, but certainly not least, we would like to thank all those

who took the time to submit papers and hence made this event possible in the first place.

We hope this session will fulfill its purpose to provide new insights from both the engineering and the computer science side and encourages interdisciplinary exchange of ideas and cooperations. We hope that this will continue ParSim's tradition at EuroPVM/MPI.

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